

2008 Northern Marianas College Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Overview

The Northern Marianas College-Cooperative Research Extension and Education Service (NMC-CREES) provides quality technical programs, services, and information to benefit the people, the environment, and the economy of the Commonwealth of the Northern Mariana Islands. With continuous interaction, collaboration and a unified direction, the department is dedicated to helping improve the economic well being, living conditions and overall quality of life of its stakeholders. Our stakeholders include: farmers, families, youth, individuals, government agencies, and various ethnic communities.

In relation to other Land Grant Institutions, NMC-CREES is small in size, with fewer than twenty five employees distributed amongst the three most populated islands of Saipan, Tinian, and Rota. To provide equitable services to our stakeholders, NMC-CREES relies on key partnerships with government agencies, non-profit organizations and other entities throughout the region. Collaboration enables us to promote our educational programs, extension services, and research projects, while strengthening professional capacity to aid their respective organizations or agencies.

Extension services and research projects are primarily stakeholder driven as a result of the growing needs and challenges that the CNMI community must satisfy and face. These concerns raised by the CREES Advisory Council comprised of various facets of our community to include representatives from the youth, families, government, business, and agriculture areas respectively.

The NMC-CREES mission is accomplished through a range of technical programs offered through its two programs of Agriculture Research & Extension (ARE) and Family & Consumer Sciences (FCS). NMC-CREES' integrated approach amongst its two programs encourages a multidiscipline and multi-level collaboration that promotes efficiency and strong communication among scientists and extension faculty. This team effort aims to address the following National Goals identified by the United States Department of Agriculture:

- Goal 1: An agricultural system that is highly competitive in the global economy
- Goal 2: A safe and secure food and fiber system
- Goal 3: A healthy, well nourished population
- Goal 4: Greater harmony between agriculture and the environment
- Goal 5: Enhanced economic opportunity and quality of life for Americans

CREES PROGRAMS

Programs involved in Agriculture Research & Extension (ARE) include:

- A. Livestock Improvement
- B. Soil & Water Management
- C. Plant Protection
- D. Crop Production Improvement
- E. Aquaculture Development Program

The Family Consumer Sciences programs (FCS) include:

- A. Expanded Food & Nutrition Education (EFNEP)
- B. Diet, Physical Activity, and Health
- C. Community Resource Development
 - *Family Financial Management*
 - *Sewing for Families with Limited Resources*
 - *4-H/Youth Development*

D. Food Safety and Quality

ACCOMPLISHMENTS

This past year, NMC-CREES was able to expand its services to its stakeholders through effective programming. Through its continuous collaboration with non profit and government entities such as the Natural Resource Conservation Services, Department of Lands and Natural Resources, Department of Public Health, Division of Environmental Quality, Department of Public Safety, and the Workforce Investment Agency. NMC-CREES continues to respond to the growing concerns of the CNMI community.

The department has organized and conducted numerous workshops, field demonstrations, conferences and seminars varying in topics such as money management, food safety measures, occupational knowledge, parenting guidelines, nutrition diet and health education, community development, and sewing under the Family and Consumer Sciences (FCS) programs. In addition, there were workshops sponsored by the Agriculture Research & Extension (ARE) division on opportunities in aquaculture, nutrient management, irrigation, crop management, pesticide applications, livestock feed and disease, water quality, soil treatment, invasive species control.

NMC-CREES has been successful in receiving federal grant in aid addressing such topics as the use of Neem as a botanical pesticide, grouper feed trials, alternative control of the Cuban slugs, mapping of the New Guinea sugar cane weevil and the disease diagnostics of livestock. Additionally, the department provided consultation in the submission of Farmer Rancher Grants in the areas of aerobic composting, coconut crab production, deer ranching, abalone production, pineapple production, and alternative energy usage in farms.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	Extension		Research	
	1862	1890	1862	1890
Plan	16.0	0.0	11.0	0.0
Actual	15.3	0.0	9.8	0.0

II. Merit Review Process**1. The Merit Review Process that was Employed for this year**

- Internal University Panel
- Expert Peer Review
- Other (Program Leaders and Stakeholders representative)

2. Brief Explanation

Since the number of CREES staff is relatively small, all professional level staff are encouraged to participate in Merit Peer Review. Also, external collaborators including other institutions of higher learning may send their comments before the Peer Review. A draft of the proposal to be reviewed is e-mailed to all of the CREES staff for suggestion and comments, well before the review meeting. The suggestions and comments from the staff are collated and submitted to who initiated the proposal. The draft proposal is revised and made available to all of the staff for the merit or peer review. All available professional research and extension staff participates in the review. During the review, we assess 1) the priority of importance of the proposed project; 2) the relevance of the proposal; 3) the quality and scientific value of the proposed research or extension activities and 4) the opportunities for cooperation with others. The proposals are revised to incorporate the suggestions given during the merit review and approved by the appropriate Director and NMC President prior to submission.

III. Stakeholder Input**1. Actions taken to seek stakeholder input that encouraged their participation**

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of the general public

Brief Explanation

NMC-CREES has established Advisory Councils on the islands of Rota, Tinian and Saipan. The Advisory council members include stakeholders within agriculture, homemakers, youth, Carolinian community and businesses. These individuals are appointed by the Northern Marianas College President and serve as the main tool for program mapping.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them**1. Method to identify individuals and groups**

- Use Advisory Committees

Brief Explanation

NMC-CREES has developed over the years as a major advocate for the integration of technology via the promotion of agriculture and food sciences areas. Because of its continued exposure in the community, the department has a strong following of supporters, especially during these rough economic times. Being that we represent a largely diverse community, we make efforts at continuously looking for new stakeholders to serve. Our program staff provide the administration with a list of viable entities based on service delivery data collected in previous years. By providing such a list, the administration then forwards these individuals and/or entities with invitations to participate in the program review process.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting with invited selected individuals from the general public

Brief Explanation

The Advisory Councils continue to hold their quarterly meetings and members discuss concerns that were brought to their attention from farmers, homemakers, and community leaders. NMC-CREES held periodic meetings with stakeholders and solicited advice on community needs and priorities. In addition to such actions, our program personnel reciprocated such by actively participating in meetings held by our partners. These include: The CNMI Business Opportunities Conference, Soil and Water Conservation District meetings, Head Start Health Advisory Council, Division of Environmental Quality meetings, Parent Teacher Association meetings, Division of Youth Services meetings, Farm Service Agency meetings, and other notable associations.

3. A statement of how the input was considered

- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief Explanation

Our department uses the community's input in program and activity planning. Such input also affects our decision making process on whether or not such should be repeated again. NMC-CREES understands that in order to provide exemplary services to stakeholders, it must take the provided input in order to remain target specific.

Brief Explanation of what you learned from your Stakeholders

Because of input provided by our stakeholders we put focus on the following initiatives:

- The acquisition of a food scientist,
- seek funding for the development of a grouper, tilapia, abalone, and milk fish hatchery
- seek partnerships with tropical agriculture institutions

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
812361	0	719013	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	598733	0	739615	0
Actual Matching	0	0	0	0
Actual All Other	0	0	0	0
Total Actual Expended	598733	0	739615	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	250560	0	110156	0

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Livestock Improvement Program
2	Plant Protection Program
3	Crop Improvement Program
4	Soil and Water Quality Program
5	CNMI Families, Youth and Communities Enrichment Program
6	Diet, Physical Activity, and Health

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Livestock Improvement Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	2%		2%	
301	Reproductive Performance of Animals	5%		5%	
303	Genetic Improvement of Animals	10%		10%	
307	Animal Management Systems	20%		20%	
311	Animal Diseases	20%		20%	
312	External Parasites and Pests of Animals	5%		5%	
313	Internal Parasites in Animals	10%		10%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		5%	
315	Animal Welfare/Well-Being and Protection	3%		3%	
722	Zoonotic Diseases and Parasites Affecting Humans	5%		5%	
902	Administration of Projects and Programs	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	2.8	0.0	0.3	0.0
Actual	1.3	0.0	0.8	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
105866	0	202441	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This specific division provided the community with knowledgeable information in the improvement of animal husbandry. The program provides technical assistance in the care and production of cattle, goat, swine, and poultry production. NMC-CREES' main concern this past year was on the threats of bio-terrorism and the avian pandemic influenza scare; the primary goal of such was "emergency preparedness," to address this potential catastrophe.

The Livestock Improvement Program was able to strengthen the CNMI's Para Veterinary Capacity. This past year "Paravets" were utilized in conducting approved research projects. An animal health surveillance project funded by Hatch entitled, "Identification, Management and Control of Livestock Diseases in the Commonwealth of the Northern Mariana Islands", was approved for a total appropriation of \$90,000. With these funds, Paravets received training on the Pacific Regional Laboratory Networking, training on Foreign Animal Disease, and a certification from the University of Kentucky on the National Animal Identification system. One Paravet in particular was certified by the International Aid Transport Association- Dangerous Good Regulations (IATA-DGR) given by the Pacific Islands Health Officer Certification (PIHOA) and the Secretariat of the Pacific Community (SPC). Such a certification provides the CNMI with the human resource capacity to be able to recognize signs of disease in animals and to be able to treat them. Because of such efforts, CNMI Paravets are now able to provide more technical assistance to residents.

The program was also able to incorporate alternative dry litter waste management system into the USDA-NRCS Best Management Practices (BMP) which was originally funded by the US Environmental Protection Agency. A regional adoption of the system under the NRCS Environmental Quality Incentive Program (EQIP) grants were approved for a farmer from Tinian. Also, through direct local marketing efforts small-scale poultry operations have been implemented on Saipan and Rota.

A USDA CSREES grant on Extension Outreach and Assistance in Improved Pasture and Livestock Management Practices totaling \$300,000 was also secured for the improvement of Livestock for the CNMI. The grant is expected to promote grazing education, genetic upgrading and other livestock improvement practices that has the promise of improving the capacity of livestock.

This year a sub-regional sustainable agriculture conference in Guam was held which included sixteen participants from the CNMI. The conference's main objective was to identify and prioritize the emerging and unmet research and education needs in sustainable food, fiber, and energy systems. Along with the offer of educational information, stakeholders and policymakers were able to listen to the various accomplishments of the Western Sustainable Agriculture Research Education (WSARE) program offerings. The aggressiveness to promote sustainable agriculture awareness has given the CNMI an approximate 30% increase in awareness. Producers and extension agents were able to receive grant writing skills in five different Western SARE workshops that were held on all three islands in the CNMI. Participants shared interest in the production of deer, hot pepper, onions, and ducks that of which two farmers were able to receive funding in the areas of Sustaining Tilapia through the use of Artificial Fry Incubation System, 15,000 and the other an Integrated System for Growing Vegetables, \$12,456.

Although the program provided farmer specific consultations and workshops throughout the year, the program was able to continuously secure funding for internal projects. Grants were secured from Western Sustainable Agriculture Research Education for 2008 they are the following:

- .. Western SARE PDP "Technology Transfer of Alternative Plant Medicines for Livestock Healthcare in the Western Pacific", \$97,074
- .. Western SARE Producer plus Professional Grant "Livestock Genetic upgrading for the Marianas Islands", \$29, 974
- .. Western SARE Professional Development Program State Grant "Promotion, Networking and Coordination of Sustainable Agriculture in the CNMI", \$14, 999
- .. Western SARE Sustainable Agricultural Tours, \$1,910
- .. Western SARE- Sustainable Agriculture, Sub-Regional Conference grant granted \$50,000 to work on livestock feed utilization with University of Guam and College of Micronesia to search of possible alternative to lessen feed cost problems in the western pacific.

On January 14, 2007, Public law 15 – 43 was signed into law, which designates Northern Marianas College's Cooperative Research, Education, and Extension Service (NMC CREES) as the lead CNMI government agency responsible for Aquaculture Development through the Aquaculture & Fisheries Development Program (A&FDP). To that end, a strategy was formulated to strengthen, first, shrimp and Tilapia production and then diversify to other high value species such as grouper, abalone, mullet, milkfish, and rabbit fish. We are pleased to announce that we have assisted three shrimp farms and four Tilapia farms get established this program year. Unfortunately, rising energy cost reared its ugly head and made investigating alternative means of generating energy to lower production cost part of the overall strategy. As a young aquaculture development region, majority of the feed used in aquaculture has to be imported. Feed in itself, represents a major cost to producers, therefore, aside from energy, investigating alternative feed or feed sources is as important in the overall picture if aquaculture is to be viable in the CNMI. As such, steps have been taken to look beyond Tilapia and shrimp and a research project is underway to investigate

growing grouper using formulated feed in Recirculating Aquaculture System (RAS). Additionally, a grant proposal was recently submitted to allow NMC CREES staff and producers the opportunity to learn seaweed propagation and production as a mean of diverging from production based on animal based nutrition to production based on plant nutrient source. Meanwhile, the Aquaculture & Fisheries Development Program continues its traditional role of providing research-based information and technology transfer to aquaculture farmers in the CNMI.

In order to ensure the continuity of aquaculture development, the youths of the CNMI must be integrated into the activities of the programs. As such four high school students were, once again, recruited for the WIA & ADAP summer internship program and placed in aquaculture. Students received hands-on training in basic aquaculture practices and shared their knowledge and skills by helping out in the 4-H youth summer program and providing instructions on aquatic plants and animals production. Fifteen participants in the 4-H summer program learned about water quality, feeding practices, and basic aquaculture husbandry methods for three weeks in July.

A large workshop was held on July 10 & 11, 2008 at the Saipan World Resort Hotel. Eighty five individuals attended the workshop that included business people, farmers, policy makers, youths, public sector employees, and homemakers. World renowned experts in the field of aquaculture were on-island to conduct the workshop. The esteemed list of presenters from the University of Hawaii Sea Grant Program. Other presenters included scientists from the Oceanic Institute and the University of Guam. The workshop promoted opportunities in aquaculture for American insular areas in marine shrimp and fin fish industries using onshore, near shore, and offshore grow-out systems.

In order to keep the CNMI public current on the activities of the aquaculture program and relevant to the community, the A&FDP participated in numerous public relation functions that included staff setting up displays and entertaining inquiries at the Saipan Agricultural Fair in May '08, giving interpretive tours of the aquaculture wet laboratory to students of San Antonio Elementary School in Nov '07, a group of Mainland Chinese government officials and businessmen and Manamko from the Aging program in December '07, and the ADAP Directors and 46 Japanese students in January '08. We also participated and entertained potential clients at the NMC Information session at the Grand Hotel in December '07 and the Ayuda Network gathering at Fiesta Resort in February '08. In April '08 NMC Charter Day visitors were given a tour of the aquaculture wet laboratory and handed copies of the new A&FDP brochures explaining the activities of the program.

A Hatch research proposal to grow grouper using formulated feed was submitted to USDA and in November '07 we were informed that the proposal was approved for funding in the amount of \$130,000.00. The Hatch-funded grouper project started in January '08. We submitted a pre-proposal to the National Oceanic & Atmospheric Administration (NOAA) in October '07 for a small-scale shrimp hatchery pilot project using recirculated seawater but did not make it to the full proposal round. In December '07, the A&FD Program helped one farmer in Rota and one in Saipan submit Farmer/Rancher proposals to the Western Sustainable Agriculture, Research & Education (WSARE) program in Utah. Of the two, one was approved for funding in the amount of \$15,000.00 to minimize the need for importing Tilapia fry to the CNMI by employing an Artificial Incubation system in the production of Tilapia fry for distribution to CNMI farmers. Another pre-proposal seeking funding for a CNMI Aquaculture Development Plan was submitted to the Center for Tropical and Subtropical Aquaculture (CTSA) in April.

2. Brief description of the target audience

- Ranchers
- Livestock producers
- Government agencies
- Policy makers
- Aquaculture producers
- Retirees looking for investments
- Entrepreneurs

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	250	600	300	500
2008	300	1000	100	700

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research/Demonstration projects on Animal Diseases, Animal genetic upgrading, and Animal science

Year	Target	Actual
2008	2	3

Output #2

Output Measure

- Number of Livestock Workshops (Production, Animal Health, etc.)

Year	Target	Actual
2008	6	6

Output #3

Output Measure

- Number of Research Projects for Aquatic Species
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Numbers of new projects for paravets practicing hands-on in the CNMI

Year	Target	Actual
2008	2	6

Output #5

Output Measure

- Number of aquaculture workshops
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of workshops for ANimal Welfare. Well-being and Protection

Year	Target	Actual
2008	1	2

Output #7

Output Measure

- Number of professional trainings, meetings and conference attended and transferred

Year	Target	Actual
2008	{No Data Entered}	5

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of New Farmers engaged in Alternative Small Scale Livestock Enterprise
2	Number of farmers used Artificial Insemination program (cattle, goats, and swine)
3	Numbers of farmers market their produce (egg/meat)
4	Number of Farmers who adapted the sustainable livestock waste managements
5	Number of farmers learning how to venture new aquatic species
6	Number of clients receiving animal health services thru consultations
7	Number of clients adapted the animal waste management and learned to conserve water
8	Number of farmers who becomes aware about animal welfare and protection from workshops
9	Number of farmers improved animal productivity thru improved pasture/rotation grazing
10	Number of proposal submitted for funding for animal nutrient utilization, animal production and animal health
11	Numbers of farmers learning from program
12	Number of farmers learning about small scale alternative livestock enterprise
13	Numbers of farmers become aware of economic and public health diseases of livestock animals (swine,poultry, cattle, goat etc.)
14	Number of youths learning animal management system and animal welfare and protection
15	Number of farmers become aware of toxic weeds and poisonous plants in the CNMI
16	Number of farmers who venture to another livestock business because of success in previous farming
17	Number of farmers who learned to formulate local feeds stuff as feed supplement
18	Number of farmers who regularly dewormed their animals for ecto and endoparasitism
19	Number of farmers learning different types of potential aquatic specise for business

Outcome #1**1. Outcome Measures**

Number of New Farmers engaged in Alternative Small Scale Livestock Enterprise

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	6

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Small producers were concern about high feed cost and limited marketing opportunities. They tend to seek assistance from other funding sources to aid them in production cost.

What has been done

Grant writing workshops and coaching were offered to producers as well as Farm Service Agency loan education. NRCS EQIP grants training were introduced and campaigned among ranchers.

Results

Two additional new producers availed Western SARE grants. They got funded for integrated agriculture systems and aquaculture. Four more ranchers availed assistance from the EQIP grants as results of the collaborative campaign. The projects are about dry litter waste management and grazing management strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
722	Zoonotic Diseases and Parasites Affecting Humans
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
307	Animal Management Systems
303	Genetic Improvement of Animals
111	Conservation and Efficient Use of Water
902	Administration of Projects and Programs

Outcome #2**1. Outcome Measures**

Number of farmers used Artificial Insemination program (cattle, goats, and swine)

Not reporting on this Outcome for this Annual Report

Outcome #3**1. Outcome Measures**

Numbers of farmers market their produce (egg/meat)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Marketing of livestock was through live auction either direct selling or thru flea market. Lack of slaughterhouse in the three islands prohibits marketing opportunities.

What has been done

Education and promotion among producers to come up with a Cooperative that will support and assist for the slaughterhouse and Meat inspector in each islands.

Results

Advisory groups are currently working on building a cooperative. Slaughter house project is pending with local agriculture budget . Assisting the group to apply with FSA on the need to train for Cooperative.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs
307	Animal Management Systems

Outcome #4

1. Outcome Measures

Number of Farmers who adapted the sustainable livestock waste managements

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing water pollution problems made island people concern about farming. Thus, more and more individual wanted to learn and do their part in the control of water pollution coming from animal production. Interest also to minimize diseases through dry surroundings made by dry litter management is slowly building awareness among farmers.

What has been done

Actual demonstrations sites of the dry litter waste management are still in place in the region. Brochures and posters were disseminated. The system was recently included with NRCS EQIP for best management practices.

Results

Two farmers register with NRCS for implementing dry litter in the islands of Tinian and Saipan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
111	Conservation and Efficient Use of Water
722	Zoonotic Diseases and Parasites Affecting Humans
902	Administration of Projects and Programs

Outcome #5**1. Outcome Measures**

Number of farmers learning how to venture new aquatic species

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	3

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Because our current aquaculture offerings has us limited at tilapia and shrimp grow out, efforts must be made at continuously providing farmers with new technology that increases their product offerings.

What has been done

This past year we performed numerous workshops in the areas of shrimp brood stock on the islands of Saipan, Tinian, and Rota. We took this approach being that a new publication by Dr. John Brown, University of Guam focused on the potential of expanding from consumption to brood stock production. This past year we also ventured into grouper production in response to the high demand for grouper in the Hong Kong market. As a result of further literature review, the program is now promoting the grow out of the donkey's ear abalone. This tropical species of abalone has drawn our interest being that it has high returns associated to its low cost of production.

Results

During this reporting period, we are pleased to report that one farmer is now exporting shrimp brood stock out of the CNMI. We do not have any data at the moment to report on our grouper activities. Although relatively new, our abalone promotion is currently being considered by two farmers. These farmers are currently constructing their production facilities to start production in 2009.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #6**1. Outcome Measures**

Number of clients receiving animal health services thru consultations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

More ranchers require knowledge on animal health. Mortalities have been common and been wanting to answer the source of problems. Producers are limited of funds to limit the scenarios.

What has been done

Simple animal health prevention plan were implemented on case to case basis. This involve control and treatment protocols per animal breeds.

Results

Increase awareness and involvement have resulted to regular consultations, training of paravets, rigid monitoring of animal health, producer's involvement, and feedback to paravets and CNMI vets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
722	Zoonotic Diseases and Parasites Affecting Humans
313	Internal Parasites in Animals
312	External Parasites and Pests of Animals
301	Reproductive Performance of Animals
311	Animal Diseases
303	Genetic Improvement of Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #7

1. Outcome Measures

Number of clients adapted the animal waste management and learned to conserve water

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Water pollution in island setting are alarming and livestock producers are aware of its possible contribution to the problem. However, application of dry liter system are limited due to lack of equipment availability for some islands.

What has been done

There is constant promotion of the program with the help of other local and federal agencies. However, less producers adopted as expected due to decrease in farm operation due to our current economic crisis. Other alternative systems were also investigated for islands with limitations to chippers.

Results

Requesting assistance from local public works for the wood chipping service for farmers. Getting their involvement with NRCS' EQIP program via a memorandum of understanding. Other farms have closed due to economic conditions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
111	Conservation and Efficient Use of Water
902	Administration of Projects and Programs

Outcome #8

1. Outcome Measures

Number of farmers who becomes aware about animal welfare and protection from workshops

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Moralities among livestock have been identified in the recent years due to simple water and feeding neglect as well as lack of a consistent health regimen. With the creation of animal protection laws and local organization in Saipan, this has resulted in greater awareness.

What has been done

On farm consultations with producers on animal welfare have been done. Insertions of such ideas are now part of the day to day protocol in the pursuit of greater animal performance.

Results

Increasing awareness among local ranchers has been resulted out of an active campaign. Simple procedures have been linked to major problems, thus a realization among ranchers. Such examples have proven to be an asset to program delivery and that prevention is better than treatment in most cases.

4. Associated Knowledge Areas

KA Code	Knowledge Area
315	Animal Welfare/Well-Being and Protection
902	Administration of Projects and Programs
307	Animal Management Systems
111	Conservation and Efficient Use of Water

Outcome #9

1. Outcome Measures

Number of farmers improved animal productivity thru improved pasture/rotation grazing

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poor animal production was common because of inferior quality grass rations in our current island settings. Less farmers are aware about grazing strategy that could benefit their present farming operations.

What has been done

Ranchers were encouraged to avail to the NRCS EQIP program. Demonstration of best management practices by Western SARE and NRCS were actively promoted. Workshops with experts in the fields of range management, grazing system, animal husbandry and economics were offered to the three islands. Other producers applied for SARE grants to demonstrate grazing efficacy and are being funded for 2008.

Results

Increased awareness and knowledge as well as skills among participants. It is expected that more and more producers will engaged in pasture rotation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs
307	Animal Management Systems
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
111	Conservation and Efficient Use of Water
315	Animal Welfare/Well-Being and Protection

Outcome #10

1. Outcome Measures

Number of proposal submitted for funding for animal nutrient utilization, animal production and animal health

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Island producers find ways to alleviate the deficiency needed in their operation. Recently, they have been trying to find assistance from federal grants. Problems identified are in production, animal health and nutrient utilization.

What has been done

With collaboration from University of Hawaii, University of Virgin Islands and University of Guam, we submitted a proposal for a regional livestock outreach program for the CNMI and Guam (submitted to USDA CSREES and got funded recently in the amount of \$300,000). USDA Western SARE recently released funding for Artificial insemination and Utilization of Alternative herbal medicines for livestock healthcare in the amounts of \$29,974 and \$97,074 respectively. For nutrient utilization, as part of the Sub-regional conference, NMC-CREES was awarded \$50,000 to work on alternative feed utilization jointly with the University of Guam.

Results

A total of four projects were awarded on the above topic areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
902	Administration of Projects and Programs
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans
303	Genetic Improvement of Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
312	External Parasites and Pests of Animals
301	Reproductive Performance of Animals
313	Internal Parasites in Animals

Outcome #11

1. Outcome Measures

Numbers of farmers learning from program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The promotion of livestock on the islands has been minimal due to the lack of veterinary services previously. With the presence of the CREES veterinarian we hope to increase program impact in our community.

What has been done

Train the trainer activities for paravets, in-farm training and workshops among producers and youths were performed.

Results

Increased in skills and knowledge among producers as exemplified by increasing number of participation, calls for assistance, interested applicants for grants etc.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #12

1. Outcome Measures

Number of farmers learning about small scale alternative livestock enterprise

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

With the economic condition in the islands, there remains a serious need for alternative sources of income among producers. More calls regarding business start up and feasibility studies were noted.

What has been done

Workshops and actual demonstrations of the operations were shown especially in the aquaculture area.

Results

Investigation of other aquatic species as exemplified with the research in abalone.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
902	Administration of Projects and Programs

Outcome #13**1. Outcome Measures**

Numbers of farmers become aware of economic and public health diseases of livestock animals (swine, poultry, cattle, goat etc.)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	100

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

In 2008 producers wanted to raise clean animals and reduce infected ones. We aim to have zero outbreaks of Brucellosis in cattle, Leptospirosis-free swine and maintaining an Avian flu free CNMI.

What has been done

Program personnel conducted Animal Disease Surveillance through clinical observations, animal health consultation, and diagnostic examinations. Rapid Test kits for avian influenza were purchased and were actively used. Forums and workshops in Avian flu and pandemic flu were done to create greater public awareness. Training of health technicians for IATA-DGR have been concluded. Veterinarian attended Pandemic flu training and seminars regionally and locally to gain insight on the regional situation in animal diseases.

Results

Increased skills and knowledge among professionals. Clear results that CNMI is Avian flu negative as of the date of the test. Increased collaboration in the Pacific region.

4. Associated Knowledge Areas

KA Code	Knowledge Area
722	Zoonotic Diseases and Parasites Affecting Humans
313	Internal Parasites in Animals
312	External Parasites and Pests of Animals
311	Animal Diseases
902	Administration of Projects and Programs

Outcome #14**1. Outcome Measures**

Number of youths learning animal management system and animal welfare and protection

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	200

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Moralities due to neglect feeding and watering of animals was raised, drawing issues in animal welfare.

What has been done

client education targeting children on proper feeding and watering were actively conducted via workshops and on site visits.

Results

Increased awareness in animal welfare.

4. Associated Knowledge Areas

KA Code	Knowledge Area
315	Animal Welfare/Well-Being and Protection
902	Administration of Projects and Programs
307	Animal Management Systems

Outcome #15**1. Outcome Measures**

Number of farmers become aware of toxic weeds and poisonous plants in the CNMI

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Invasive species was identified as one of the top problems the CNMI is facing. It poses a threat to the delicate ecology of our islands.

What has been done

Public forums, conferences and workshops regarding invasive species in the Pacific region were coordinated this reporting period. Bio-agents in control of invasive plants were introduced as approved by the USDA. Training was also offered to professionals in response to this growing concern.

Results

As a result of our efforts we are pleased to report the creation of task force in the CNMI

4. Associated Knowledge Areas

KA Code	Knowledge Area
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

Outcome #16

1. Outcome Measures

Number of farmers who venture to another livestock business because of success in previous farming

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to worsening economic conditions, farming is plainly subsistence in nature. Producers spend less for farming operations.

What has been done

Showcasing previous producers who succeeded in alternative enterprise is one way to encourage other producers however, they were still waiting for the best opportunity being affected by economic conditions.

Results

Approval of the Livestock feed importation in the Philippines will pave way to better feed price. Unfortunately, feeds cost was never regulated in the CNMI. No changes were attained.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #17**1. Outcome Measures**

Number of farmers who learned to formulate local feeds stuff as feed supplement

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	75

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Due to the CNMI's current economic situation, we have noticed more and more producers spending less for feeds for their livestock. They are now resorting to locally available resources.

What has been done

Trial and error research on the feed ration of different fruits , vegetables, grasses etc. among local clients were performed. Results were mostly based on size (mainly subsistence). Western SARE funded a grant in the recent sub-regional conference amounting to \$50,000 regarding alternative utilization of feeds.

Results

More producers have tried to look for alternative as result of economic turmoil.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #18**1. Outcome Measures**

Number of farmers who regularly dewormed their animals for ecto and endoparasitism

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	80

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Poor production among swine and ruminants were attributed to parasitism. No de-worming regimen were implemented. Lack of awareness has led to poor animal quality.

What has been done

Training opportunities for paravets and producers regarding the de-worming regimen in livestock we conducted. A focused approach using 'Hands-on demonstrations' were performed with interested producers.

Results

Increased awareness, skills and knowledge among producers, paravets and other extension staff. Animals of participants became healthy and less prone to mortality.

4. Associated Knowledge Areas

KA Code	Knowledge Area
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals

Outcome #19

1. Outcome Measures

Number of farmers learning different types of potential aquatic specise for business

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Cultural)

Brief Explanation

Changing priorities because of economic depression that was experienced for 2008 that affected the outcomes.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Other (Questionnaire/survey, evaluation)

Evaluation Results

Producers depend on external funding assistance to operate their operation. Economic situation made them helpless and put animal production to their least of priorities. Government assistance on installation of slaughterhouse, meats inspectors and creation of marketing opportunities will help the livestock industry to be successful in the future.

Key Items of Evaluation

None to report

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plant Protection Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	40%		40%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	10%		10%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
215	Biological Control of Pests Affecting Plants	20%		20%	
216	Integrated Pest Management Systems	20%		20%	
Total		100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	3.3	0.0	4.3	0.0
Actual	1.3	0.0	1.8	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
60959	0	225299	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Many of the exotic pests that presently exist in the CNMI were brought into the islands through commerce, through the importation of agricultural goods and commodities. Some were brought in by travelers both from returning residents and visitors from abroad, particularly those who bring in plant materials for propagation of fruits, nuts and ornamentals that harbor unsuspected pests. If a pest is introduced into an area where its natural enemies do not exist, and environmental conditions are well suited to the introduced pest, then the propensity of such pest to reproduce would be unchecked, barring other limiting factors in the environment. The potential of introduction of invasive species into the CNMI will continue to be of great concern as long as there are air and ocean vessels bringing into the islands cargoes of fruits and vegetables, and travelers or visitors to the islands who come and go. Therefore, the need for continued surveillance for invasive species, and to find means to suppress or eradicate those that have become established, cannot be overemphasized.

During the reporting year, the Crop Protection/Integrated Pest Management (IPM) personnel continued to monitor crop pests and the invasive species that were newly detected during the "Arthropods Survey" in 2006-2007. These include: Papaya Mealybug (*Paracoccus marginatus*), Erythrina Gall Wasp (*Quadrastichus erythrinae*), Cycad Scale (*Aulacaspis yasumatsui*) and the Coconut Rhinoceros Beetle (CRB) (*Oryctes rhinoceros*). In addition, we continued to rear in the laboratory the Clearwinged Moth (*Melittia oedipus*), a biological control agent against the Ivy Gourd (*Coccinia grandis*). In July 2008, we started to introduce *Heteropsylla spinulosa*, a parasite of the Giant Sensitive Plant (*Mimosa diplotricha*). At the same time, we continued to work on the project: "Survey and Mapping of New Guinea Sugarcane Weevil and Banana Root Borer Weevil in the CNMI."

2. Brief description of the target audience

- Farmers, other crop producers and farm helpers
- Business operators that promote or sell farm products
- Grade schools, high schools and college students interested in further knowledge in agriculture
- Adult volunteer leaders (4-H Clubs)

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1000	500	1000
2008	600	1500	2000	2500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	1	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Research Projects completed on Invasive Species such as scarlet guard, melon fly, papaya mealy bug, and Cuban slug)

Year	Target	Actual
2008	1	1

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of farmers learning biological control methods against invasive species
2	Number of farmers using biological control against invasive species
3	Number of farmers learning Integrated Pest Management for suppression of invasive species and reduction of damage they cause
4	Number of farmers using Integrated Pest Management to control invasive species
5	Decrease the population of the various invasive species (Cuban Slug; Melon Fly; Sweet potato Weevil; Whiteflies infestation) by certain percentage:
6	Number of farmers learning the identity of invasive species through the use of the invasive species or economic insect reference collection
7	Number of farmers able to identify some of the invasive species causing damage to their farm crops
8	Number of farmers learning best practice management to control or eradicate the Cuban Slug, <i>Veronicella cubensis</i>
9	Number of farmers implementing best practice management to control or eradicate the Cuban Slug, <i>Veronicella cubensi</i>
10	Number of farmers learning methods of early detection of crop pests and diseases on their farms
11	Number of farmers using methods of early detection of crop pests and diseases on their farms
12	Numbers of farmers attending workshops, demonstration, and presentation on invasive species

Outcome #1**1. Outcome Measures**

Number of farmers learning biological control methods against invasive species

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	20

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

During the reporting year, the Crop Protection/Integrated Pest Management (IPM) personnel continued to monitor crop pests and invasive species that were newly detected during the surveillance 'Arthropods Survey' in 2006-2007. These include: Papaya Mealybug (*Paracoccus marginatus*), Erythrina Gall Wasp (*Quadrastichus erythrinae*), Cycad Scale (*Aulacaspis yasumatsui*) and the Coconut Rhinoceros Beetle (CRB) (*Oryctes rhinoceros*). These newly introduced invasive species affects crop production in the CNMI.

What has been done

We continued to rear *Cecidochares connexa* against the plant Masisig (*Chromolaena odorata*). We initiated the project: 'Biological Control of Papaya Mealybug in Tinian, CNMI. We continue to introduce 3 species of parasitoids (*Pseudeutomastix mexicana*, *Acerophagus papayae* and *Anagyrus loecki*) to control the Papaya Mealybug. At the same time, we continued to work on the project: 'Survey and Mapping of New Guinea Sugarcane Weevil and Banana Root Borer Weevil in the CNMI'. The IPM program continues to conduct regular farm scouting, workshop/field days to enhance farmer skills in making the best management decisions.

Results

In May 2008, we found galls on *Chromolaena* thickets along the main road before entering Songsong Village, Rota. In September and October 2008, we found the gall fly had spread from the initial release site at Rota Resort to Sinapalo in the north central part of Rota, to Sabana area, to Songsong Village in the south and areas in between. We plan to collect and rear specimens of this gall fly from Rota to introduce to Saipan and Tinian, where *Chromolaena* is also prevalent and widespread.

As of June 2008, the population of mealybug on *Plumeria* was practically gone. We conducted extensive surveys of Papaya trees in June 2008 and we found no mealy bug on any of the trees we surveyed. It is our initial assessment that the parasitoids proved effective.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #2**1. Outcome Measures**

Number of farmers using biological control against invasive species
Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

Number of farmers learning Integrated Pest Management for suppression of invasive species and reduction of damage they cause

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of farms and farmers are decreasing rapidly, down about 20-50% in the past 2 years due to cost of production and pest problems. Pest management is also very tricky here, since all pests have been imported into these island ecosystems, without natural enemies. Even after successful suppression or eradication programs, new plagues of pests may be delivered by tropical storms and typhoons. Typhoons also regularly destroy most vegetation, and all the standing crops. Pest populations may fluctuate rapidly and greatly with severe impacts on crop production.

What has been done

IPM scouting was done to train the farmers, students and interns in entomological techniques and familiarize them with various activities in the plant protection program. The participants were trained in field-scouting techniques on how to spot and identify crop pests, how to recognize pest damage on crops, how to collect specimens for rearing, and how to preserve them for Economic Insects Reference Collection. While conducting our monthly Melon fly traps survey, we also conduct extension farm visit to see what pests are present in the farms and to make recommendations to farmers on what can be done to resolve individual pest problem. We conduct farm visitations once a week when weather permits.

Results

The participating farmers are now familiar with the life cycle of insects and which areas cause the most damage. Such abilities increase their capacity to make best management decisions. Now farmers have increased their knowledge of optimal pest management strategies. Of particular concern, the water in the CNMI is very susceptible and vulnerable to contamination from pesticide runoff.

4. Associated Knowledge Areas

KA Code	Knowledge Area
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #4

1. Outcome Measures

Number of farmers using Integrated Pest Management to control invasive species

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Decrease the population of the various invasive species (Cuban Slug; Melon Fly; Sweet potato Weevil; Whiteflies infestation) by certain percentage:

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Island ecosystems are delicate in that many do not have mechanisms at fighting foreign intruders. Being the only research agency in the commonwealth, we are tasked with keeping invasive species at bay.

What has been done

NMC CREES felt that solving all these problems in a strategic and progressive manner will be the solution. Through the use of biological agents on the scarlet gourd, masigsig, papaya mealy bug, we aim to keep an ecological balance.

Results

Outside of the papaya mealy bug, we will need to monitor pest populations to get conclusive results.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #6

1. Outcome Measures

Number of farmers learning the identity of invasive species through the use of the invasive species or economic insect reference collection

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI Plant Protection and IPM program are charged with providing the best possible advice for dealing with the new array of pest problems and emergence of new pest species and should come up with a sound solution that will most benefit the farmers. The priorities should include training on improving its' farmers' skill how to identify properly any newly established pests.

What has been done

Program personnel focused on training first responders this past year. The participants were trained through the Agriculture Development in the American Pacific (ADAP). Pacific Island Distance Diagnostics and Recommendation System (PIDDRS) They were taught how to take images of insect pest and plant diseases or any other suspected potential pest to be submitted System (PIDDRS) for evaluation.

Results

The farmers and stakeholders who became first detectors were increasingly aware on how to report any new invasive species establishment in the CNMI that they cannot identify on hand. They also were taught how to conduct field-scouting techniques on how to spot and identify crop pests, how to recognize pest damage on crops, how to collect specimens for rearing, and how to preserve them for the economic insects reference collection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
213	Weeds Affecting Plants

Outcome #7

1. Outcome Measures

Number of farmers able to identify some of the invasive species causing damage to their farm crops

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CNMI agricultural productions are at subsistence level and any threat to these activities can seriously affect the livelihood of the community and its economy. The islands have very limited agricultural resources. These islands system are extremely fragile and vulnerable to the impacts of invasive species, therefore, any intrusion of new species could be devastating to the ecological balance.

What has been done

The Plant protection program has developed complementary methods of best management practices, and has adopted proven methods of addressing invasive species. It has also developed through cataloguing the pernicious invasive species, developing reference collections for educational purposes and collaborating with regional agencies and institutions to develop systems to minimize the deleterious impacts of invasive species through biological control.

Results

The program has successfully delivered to farmers and stakeholders the information, increased technical skills to identify and the increased awareness on invasive species and to understand the relationship between invasive species and agriculture production. IPM program has been able to minimize the impacts and damages of invasive species to their crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #8**1. Outcome Measures**

Number of farmers learning best practice management to control or eradicate the Cuban Slug, *Veronicella cubensis*

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	20

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

In the past few years a newly introduced species of slugs *Veronicella cubensis*, has multiplied on the island of Rota. It has developed into a serious pest on local crops, endangered plant species, and other beneficial plants. Its presence threatens other areas in the Pacific region.

What has been done

NMC-CREES IPM program and the task force on Rota from the DLNR has developed complementary methods of best management practices, and taught the farmers, stakeholders and the general public on how to avoid and take precautionary measures not to move slugs to new areas. To date on a grant funded by WSARE to compare various practices to suppress the population of slugs, the project is on currently on going.

Results

Because the project is at its initial start, data is still being collected.

4. Associated Knowledge Areas

KA Code	Knowledge Area
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #9**1. Outcome Measures**

Number of farmers implementing best practice management to control or eradicate the Cuban Slug, *Veronicella cubensi*

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

At present farmers, home gardeners, and backyard ornamental nurseries are suffering major losses due to the high populations of slugs around the island. Actual figures of damage are not available at present however; most reports from the general public indicate that the current losses are substantial and the current costs of suitable control measures (e.g. baiting) are prohibitive. Several farmers have simply abandoned their fields creating other related problems from other pests.

What has been done

NMC-CREES is actively demonstrating alternative control methods using neem and ducks on various Rota farms.

Results

The result of some on farm demonstrations using various techniques on slug control has brought interest to more farmers and growers to adopt the best practices on their farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #10

1. Outcome Measures

Number of farmers learning methods of early detection of crop pests and diseases on their farms

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The agricultural and horticultural activities in the CNMI have already been hampered with pest and diseases. CNMI is susceptible to various crop pest and intrusion of invasive species due to weather and climate being favorable for a widespread population growth. The Crop protection team is charged with providing the best possible advice to farmers the best ability to detect any potential pest

What has been done

The program has continued to train and certify first detectors to be responders and early detectors as train the trainers program. These certified detectors were composed of Quarantine staff and extension agents to teach the farmers to improve their skills in identifying their pest problems.

Results

Participating farmers have witnessed dramatic increases in their production after learning methods on how to detect their pest problems in their farms. Such efforts include the set up of monitoring traps to identify which insect pests are prevalent. These farmers call our offices to report any new insects that they are unable to identify on hand. The participating farmers are now familiar with the life cycle of insects and which areas cause the most damage. Such abilities increase their capacity to make best management decisions

4. Associated Knowledge Areas

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #11**1. Outcome Measures**

Number of farmers using methods of early detection of crop pests and diseases on their farms

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	5

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

CNMI farmers have a history of being dependent on commercial pesticides. The use of readily available pesticides is somewhat systemic and without regard for economic thresholds.

What has been done

The crop protection team has established monitoring sites to detect the presence of harmful and beneficial insects. By using the collected data, agents educate farmers on when to make informed decisions on spraying.

Results

More participating farmers in this program adopted the knowledge of regular farm scouting and monitoring for the presence of new insects, weeds and diseases for them to establish what best management options will be applicable to their farming operation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #12**1. Outcome Measures**

Numbers of farmers attending workshops, demonstration, and presentation on invasive species

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There remains a growing concern about the agriculture industry's use of pesticides. This stems from the need for greater education on IPM related topics which cultural control and the use of environmentally friendly solutions.

What has been done

As part of the Pesticide Safety and Education Program (PSEP) our staff organized a commercial category workshop targeting the golf course, hotel, and nursery operations on the island of Rota.

Results

As a result of the continued PSEP support, 16 individuals attended our target specific training course. Out of the 16 participants, 6 were able to successfully complete the course. Although not all participants were able to pass and lawfully use restricted use pesticides, our program feels that they all received training on cultural control.

4. Associated Knowledge Areas

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities
- Other (competing public priorities)

Brief Explanation

Our department was challenged by hiring and replacing FTE's targeting this program area.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Time series (multiple points before and after program)

Evaluation Results

As a result of our program efforts, we are seeing more people adopting IPM strategies to combat their pest problems. Although we are making steady progress in this area, there is a need to increase efforts at increasing our staff capacity.

Key Items of Evaluation

None to report.

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Crop Improvement Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	40%		40%	
205	Plant Management Systems	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	1.0	0.0
Actual	1.0	0.0	2.8	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
60988	0	311875	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Tissue culture of economically important crops conducted such as banana, sweet potato, taro etc. to produce quality and disease free plants. Field trials and evaluations of new varieties in fruits, root crops and vegetables continued in local soil and climatic conditions of the CNMI. Research projects in the form of fruit and vegetable variety trials performed locally. Workshops conducted for farmers, extension agents, and students on fruit tree grafting, crop production and improvement along with other propagation techniques. Publications (brochures and fact sheets) and video production produced and disseminated through informational seminars and lectures. Farmer-type gatherings such as association meetings, soil and water conservation district meetings and forums, field days organized. Students from the grade school, high school and college also involved in the activities, presentations and field days. Implemented best management practices on farms.

2. Brief description of the target audience

- Government /Agency Collaborators
- All farm crop producers and farm helpers in the CNMI
- Business operators that promote or sell farm produc
- Grade school, High School and College student
- Adult Volunteer Leaders (4-H Clubs)

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	100	500	100	500
2008	150	600	200	250

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year Target

Plan: 0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	2	
2008	1	2	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Crop Improvement Issues

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of households that begin to grow food in their own garden
2	Number of farmers that learn to use Organic agriculture production systems on farm
3	Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

Outcome #1**1. Outcome Measures**

Number of households that begin to grow food in their own garden

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The NMC CREES Crop Improvement and Production Program has continued in conducting on farm demonstration trials on the islands of Saipan, Rota, and Tinian with cooperating farmers. There was a remarkable increase in the number of cooperating farmers who has participated in this program. In hopes of improving vegetable crop production in the CNMI, we have increased numerous varieties for trials. The varieties chosen such as; head cabbage, cauliflower, broccoli, red bulb onion, sweet basil, okra, bitter melon, tomatoes, sweet corn and cucurbits were tested pest and disease resistance as well as yield result.

What has been done

Rota farmers find vegetable production very difficult after the ban of more effective chemicals used to be readily available in the market. Today, many farmers totally abandon the production of leafy vegetables in favor of root crops such as taro and sweet potato. However, taro and sweet potato have their own special problems with nematode infestation. A collaborative project with a farmer and professionals from the University of Guam which aims to provide readily available alternative organic pest and nematode control in vegetable production with the use of Neem tree is on going in Rota through WSARE farmer rancher grant. The first phase of the project has proven and convinced the farmer that organic pest control using neem extract from leaves at certain formulation can be successful on head cabbage and Chinese cabbage.

Results

The farmers learned various management practices and technique to increase their production. Extension agents increased their efforts in convincing farmers how to reduce labor costs, fuel for tillers and preparation time by using a prototype plow for planting vegetables in a larger area. This has resulted in an increase of the number of farmers interested to participate in this program. The farmers estimated revenue have increased by 40%, which apparently resulted from reduced pest damage and using a prototype plow. Promoting low toxicity pesticides like Bacterial thurengiensis and Neem also reduces the risk of pesticide contamination and pest resistance to pesticides.

With the improvements in Plant Health services, it is estimated that crop production and efficiency have improved well.

Increasing number of farmers wanted to learn and venture grafting of fruit trees and nursery plant propagation of economically important and other staple crops. Farmers became aware of the potentials and strengths of grafting and tissue culture techniques. Number of farmers wanted to adopt sustainable agriculture practices to improve the soil, composting and nutrient management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
202	Plant Genetic Resources

Outcome #2

1. Outcome Measures

Number of farmers that learn to use Organic agriculture production systems on farm

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Commonwealth of the Northern Mariana Islands has had very minimal exposure to organic farming. The Crop Improvement Program stressed greater understanding of organic agriculture production systems to CNMI residents in this fiscal year.

What has been done

Demonstration plots on farm sites in the form of vegetable variety trials were performed throughout the three populated islands of the CNMI. A workshop on Soil, Nutrient, Pest, Irrigation/Fertigation Management was conducted on the island of Rota in regards to this theme. This sponsored workshop was attended by 35 stakeholders showing strong promise of greater acceptance. This workshop was intended to entice local participants to use age old farming practices proven to have great success. Issues discussed include fertigation use, nutrient management, composting, and the use of soil analysis for making decisions on farms.

Results

Although we have had numerous attendance at workshops, we do not have a quantitative numbers at the present. Farmers are currently using some of the techniques learned, however none have been organically certified.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)
202	Plant Genetic Resources

Outcome #3

1. Outcome Measures

Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

NMC CREES' primary goal is to promote a sustainable agriculture industry through scientific research. This project will use methods of conservation in order to establish a model farm for any CNMI farmer to have access to. This demonstration facility will serve as a hub for agriculture producers as well as for the general public to view and mimic in their farming and gardening endeavors.

What has been done

Activities conducted under CIG project in 2007-2008. Project was approved and implemented in 2007. The project is intended to enhance agricultural profitability on the islands and to develop the As Per Dido Agriculture Experiment Station in a manner fitting modern agricultural trends and efficiency in production considered the benefits of both traditional and modern agricultural techniques with emphasis in the maximization of soil and water resources. a. To reduce soil erosion and water overuse vetiver grass (*Vetiveria zizanioides*) was planted along the contours of the experimental field to serve as contour guidelines. Tillage and planting operations on the contours to increase water filtration and reduce concentrated water flow is progressing. Mulching, no till vegetable production and crop trials of tomato, cucumber, bell pepper, hot pepper and okra are currently in progress. By using the no till method, high labor input that comes with traditional farming methods is hoped to be saved. By implementing both farming methods, the general public will be given the opportunity to compare and contrast.

Results

A trial on no-till vegetable production is completed. Second trials on no-till vegetable production is progressing well. Currently, data collection and analysis is being done. Micro irrigation system is in place in root crops, vegetables and bananas at the As Perdido farm. Vetiver grass and paper shredder has been used as mulching. Intercropping with daok and noni is planted.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities

Brief Explanation

We did not experience any external factors that would hinder the progress of our projects for this fiscal year.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Time series (multiple points before and after program)

Evaluation Results

Time series (multiple points before and after program)

Key Items of Evaluation

NMC CREES continues to address key themes listed in Goal 1 by carrying out plans listed in our current 5 year Plan of Work. The hiring of new research staff has increased our capacity this past fiscal year. We are currently working on three hatch projects and various competitive grants to improve program functionality. Although we are currently still acquiring data on the aforementioned projects, this increased capacity has brought about positive improvements. A new plant pathology lab fit with tissue culture capability is now functional. Another notable improvement is the current fertigation and chemigation capability at our As Perdido Experiment Station. Introduction of new affordable and efficient technology will likely support and continue the momentum of aggressiveness of farmers. Finding ways to lower cost of production is necessary for successful operation in the CNMI.

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Soil and Water Quality Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	20%		20%	
111	Conservation and Efficient Use of Water	50%		50%	
403	Waste Disposal, Recycling, and Reuse	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual	1.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
28197	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The NMC-CREES Water Quality projects this past year was aimed to improve farmer profits, to promote the wise use of natural resources and to support the production of local farmer commodities. NMC-CREES with the collaboration of both local and regional partners were able to demonstrate and assist in the development and improvement of farm productions. The year has been dedicated to the contribution and development of alternative Animal Waste Management systems such as the Dry Litter Waste Management System for Swine, Chicken grazing cages, ground cover utilization (perennial peanut) and composting systems. These projects were implemented for the improvement of soil conditions and fertility, increasing productivity for farmers, while simultaneously reducing the costs of operating the farms.

Efforts continued in 2008 to demonstrate, develop and transfer appropriate technologies to the CNMI that encourage soil and water conservation and sustainable utilization of these resources. Publications and demonstrations were produced in an effort to promote systems such as the Dry Litter Waste Management System for Hog Waste that has gained increased popularity and interest amongst farmers and researchers in the region. Soil sampling, analysis, and recommendations for farmers/farmland continued in 2008 to encourage conservative usage of fertilizers and soil amendments. Recycling outreach and education activities continued in collaboration with school children at all levels with many volunteers contributing to recycling efforts at some of the larger events on the island of Tinian such as the Tinian Fiesta and Hot Pepper festival. School children at Tinian High School also created a brochure and radio skits for usage in the outreach component of the recycling promotion project in 2009.

2. Brief description of the target audience

- Government /Agency Collaborators
- All farm crop producers and farm helpers in the CNMI
- Business operators that promote or sell farm product
- Grade school, High School and College students
- Adult Volunteer Leaders (4-H Clubs)

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	100	500	100	500
2008	75	505	121	150

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on Soil and Water Quality Issues

Year	Target	Actual
2008	1	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic
2	Number of households learning to safely use Rain-catchments systems
3	Number of farmers using Dry Litter Waste Management Systems for Hogs
4	Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc...
5	Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

Outcome #1**1. Outcome Measures**

Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	105

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

People on the island of Tinian are not accustomed to recycling since no efforts have been made to promote recycling. As a result, cans and litter are scattered and strewn around roads, beaches and all public areas.

What has been done

Continued efforts to engage youth and adults in recycling education and outreach efforts at many small and large public events, to include the development of some sample radio advertisements and brochures by the Tinian High School Environmental Club.

Results

Surveys have shown that a large percentage of island residents/households are now recycling aluminum cans and other recyclable commodities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #2**1. Outcome Measures**

Number of households learning to safely use Rain-catchments systems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

With a high level of rainfall here in the islands, there is a huge opportunity for folks to catch and utilize rainwater in their households and businesses. Given that the cost of utilities(water)per household and the poor quality of government supplied water resources has further encouraged people to consider rain catchments. Unfortunately, many residents who employ rain catchments do not properly maintain and clean the catchment devices, increasing the risk of contamination and creating a threat to human health.

What has been done

Rain catchment demonstrations and publications have been disseminated and individual consultations with residents has continued.

Results

Many households now take action to maintain their tanks, and develop more efficient and safe rain catchment systems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

Outcome #3

1. Outcome Measures

Number of farmers using Dry Litter Waste Management Systems for Hogs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The great majority of pig farmers utilize the conventional spray out method of waste management which is costly and poses a threat to water resources, pig health and human health.

What has been done

Efforts have continued to promote alternative Waste Management systems such as the Dry Litter Waste Management system for hogs via videos, brochures, posters, and public television. Efforts also continue to work with Agency folks to develop standards for the Dry System that will improve performance and overall acceptance of the systems.

Results

Within the farming community, interest and knowledge of alternative systems has increased resulting in farmers either implementing dry systems on their own, requesting for information, and applying for federal assistance to implement dry systems on their farms via the NRCS-EQIP Program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
111	Conservation and Efficient Use of Water

Outcome #4

1. Outcome Measures

Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc...

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fertilizers are very expensive in the islands, limiting production and overall reducing food security levels for islanders. Furthermore, intense rainfall and storm runoff cause huge amounts of soil to quickly slip into the ocean. Promotion of composting of animal waste and yard scraps has the potential to improve soil structure, integrity and fertility.

What has been done

Workshops, publications and demonstrations have continued in 2008 to promote composting

Results

Composting has gained increased popularity and interest. A number of residents have begun composting at home and on their farms. Furthermore, a number of residents have applied for federal assistance via the NRCS-EQIP program to facilitate composting upon learning more about it's benefits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
111	Conservation and Efficient Use of Water

Outcome #5

1. Outcome Measures

Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sustainable Agriculture Techniques can increase productivity and profitability of farms on Pacific islands, further increasing levels of food security for islanders.

What has been done

Efforts have continued to demonstrate and promote sustainable agriculture systems that are appropriate for Pacific islands via a variety of outreach media and materials.

Results

Popularity and interest has risen with respect to Sustainable agriculture techniques resulting in adoption of these techniques on multiple farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities

Brief Explanation

The extremely depressed economy has caused many to limit their agriculture endeavors due to the rising cost of production.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

The main evaluation tool for this program has been before and after studies that allow for direct observation of adopted practices.

Key Items of Evaluation

The first two applicants for implementing Dry Litter Waste Management systems have gone through the application and approval process. These will be the first of their type and are the result of intense collaboration and promotion of sustainable systems.

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

CNMI Families, Youth and Communities Enrichment Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	40%		40%	
802	Human Development and Family Well-Being	10%		10%	
806	Youth Development	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	0.0	0.0
Actual	3.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
230947	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Community Resource Development (CRD) Program continues to conduct mini workshops, life skills lessons, training, hands-on-demonstrations and presentations throughout the CNMI for farmers, businesses and homemakers on the concept of adding value to existing agriculture products, food safety, marketing within and outside the CNMI, Federal Regulations and Requirements for food processors and product labeling requirements.

CRD also conduct workshops on Youth Money Management and Family Financial Management at NMC instructional sites, public and private schools, village social halls, the Center for the Man'Amko (Elderly), private day care centers, CNMI military support groups and other various non-profit organizations.

This year, CRD developed presentations and conducted workshops on Money Management for NMC students. This came about at the request from the NMC Counseling and Student Services programs. A good number of students relocating from NMC Rota and Tinian campuses to the NMC main campus on Saipan had no experience managing money independently. The workshop strongly emphasized on "Money and Time" for they are two things that many college students need to learn to manage.

CRD conducted workshops on Home Arts and Designs on the islands of Rota, Tinian and Saipan. Local artists from Rota and Tinian taught sand painting, children painting, sculpturing clay and wood, making lei using tea leaves, making picture frames using bamboo sticks and seashells. Staff from the office of the Carolinian Affairs Office taught participants how to make mwar mwar, basket weaving using coconut leaves, making necklaces, bracelets and earrings using special beads acceptable to the Carolinian community. CRD staff and the 4-H/Youth Development program leaders also taught home arts and crafts for youth and adults. The total number of participants combined from all three islands was 173.

The CRD Sewing program offers sewing classes for beginners and home arts and designs. Students go through a rigorous process which requires them to know the functions, parts and basic maintenance of a sewing machine, students are also required to complete 12 sewing projects that include lessons on hand hemming, making patterns based on individual body measurements, dress making, etc.

The CRD Sewing Program requires the Sewing Instructors on Rota, Tinian and Saipan to graduate a minimum of 30 students per year. To date, Saipan graduated 76 students, Rota graduated 61 students, and Tinian graduated a total of 51 students for 2008.

The 4-H Youth Development Program was well represented in 2008 with an abundance of both new and on-going programs that aim to provide CNMI Youth with a variety of meaningful programs for youth development, guidance and capacity building. With the assistance of many volunteers and supporters, the 4-H team has continued to build a consistent basis of programs throughout the CNMI, a quest that has been greatly enhanced in 2008 with the enlistment of our newest and highly valued team member on Rota.

This year, the 4-H Youth Development Program on Rota, initiated a project known as the Youth Farm Plot project. A project designed to teach students the basics of agriculture, putting great emphasis on farm safety, pest control management, waste management, soil management, erosion control, and a study on plant diseases. The 4-H Rota Club also began circulating its first ever quarterly newsletter. This newsletter was intended to help promote the 4-H Program by giving its readers specific information on upcoming activities and by publicizing student achievements. This newsletter also dedicates a specific portion of the paper to publish the efforts of our community volunteers

In an effort to spread the word about the 4-h program and build relationships with local and regional partners, the 4-H program has participated in a range of events such as the 2008 CYFAR Conference, Palliative Care Conference, National 4-H Volunteer Leaders Forum, Professional Development Seminar, National Breast and Cervical Screening Month, 1st Annual Spooktacular Family Fun Fair, Domestic Violence Prevention Month, National Home Care Month, National Diabetes Prevention and Awareness Month, Nutrition Month, NMC Charter Day, Kick Butt Day, Environmental Awareness, CREES Open House, American Red Cross Walk-a-thon and Parent Leadership month. The 4-H program was also represented within various volunteer community groups such as the Resource Conservation and Development Council, Commonwealth Diabetes Coalition (CDC), Commonwealth Substance Abuse and Prevention Coalition (CSAPC), Commonwealth Cancer Coalition (CCC), Marianas Alliance Non Government Organization (MANGO), and the Saipan, Tinian and Rota Agriculture Fair Associations.

The CNMI 4-H Program has over the years has continued to provide presentations and trainings that are appropriate for developing physical, social, and study skills amongst the CNMI youth, while simultaneously building a sense of pride in their local culture, themselves and their community. These trainings are delivered at a variety of public and private schools and community centers. In 2008 these trainings covered topics such as leadership, self-esteem, goal setting, time management, peer pressure, team building, team work, communication, values, attitude, and life skills, arts n crafts, scrap booking, drawing, bead making. Many of the program activities would not be possible without the efforts of NMC-CREES volunteers who help to deliver lessons on agriculture related topics such as aquaculture, health and nutrition, entomology, and others.

2. Brief description of the target audience

- Kids (6-7)
- Youth (8-17)
- Youth Leaders (18-21)
- Adult Volunteers for Leaders
- Economically Disadvantaged
- Senior Citizens (Man Am'ko)
- Caregivers for the elderly
- Business Community
- General Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	1000	1000	3000
2008	300	505	2013	2500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Youth and Adults completing Money Management and Family Financial Management workshops.

Year	Target	Actual
2008	150	200

Output #2

Output Measure

- Number of 4-H Clubs established in the CNMI

Year	Target	Actual
2008	4	5

Output #3

Output Measure

- Number of established Entrepreneurs projects

Year	Target	Actual
2008	6	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of participants completed workshop and training on home canning and food preservations.
2	Number of participants applying knowledge gained. (Home canning and food preservation)
3	Number of youths and adults successfully completing the Sewing for Beginners on the islands of Saipan, Tinian and Rota.
4	Number of youth and adults applying knowledge gained and sewing for their families.
5	Number of youths and adults completing workshops on Youth and Adult Money Management.
6	Number of youths and adults applying knowledge gained.
7	Number of Adult Volunteers Recruited.
8	Number of Youth Participating in the 4H/Youth Development Program

Outcome #1**1. Outcome Measures**

Number of participants completed workshop and training on home canning and food preservations.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	115

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

90% of the food sold in CNMI supermarkets are imported from the contiguous United States and Asia. Many of the locally grown commodities perish and are thrown away as a result. The program feels it is necessary to establish greater presence in the value adding area.

The weekly Thursday Night Street Markets and weekend Sabalu Farmers Markets continue to promote cooked fiesta/local food, arts and crafts, fresh locally grown fruits and vegetables as well as processed jams, jellies, preserved vegetables and hot chili sauces.

What has been done

The CRD Program conducted several hands-on-demo sessions on food preservation. This year, the CRD program limited its number of participants to 5 per instructional session, this enabled the client to have greater access to the instructor.

Results

Majority of the participants who attended the home canning and food preservation workshops noticed that they are spending less when it comes to shopping for their family's consumption. At the same time, they felt that they are eating healthier food as a result.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #2**1. Outcome Measures**

Number of participants applying knowledge gained. (Home canning and food preservation)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	115

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Each year CNMI farms produce fruits and vegetables that often go to waste because of viability issues. The program sees a need to respond to the over flooding of commercially viable agricultural commodities on the islands.

What has been done

A series of workshops were performed based on the seasonality of some of the commodities.

Results

There is evidence of decreased flooding of locally grown fruits and vegetables, especially in retail stores and farmers markets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #3

1. Outcome Measures

Number of youths and adults successfully completing the Sewing for Beginners on the islands of Saipan, Tinian and Rota.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CNMI residents continue to see a decline in the job opportunities being offered locally at the same time the cost of living continue to rise. As such, the CRD program sees a need to decrease dependence on expensive and imported clothing by teaching the trait of sewing to homemakers throughout the CNMI.

What has been done

A total of 445 students were taught basic sewing skills through community courses sponsored by the CRD program throughout the three most populated islands in the CNMI.

Results

The CRD Sewing Program graduated 445 students. 405 own a sewing machine and received a certificate of successful completion. 40 were youth and were not required to own a sewing machine but also received a certificate of successful completion. The CRD Sewing Program is proud to report that 6 of our adult students now own and operate a Dress or Tailoring Shops. 2 now hired 2 employees and 1 was recently hired at the Northern Marianas Trade Institute to teach sewing class.

Students continue to sew their children back-to-school cloths and saved an average of \$300.00 on back-to-school clothing. Some students made use of the skills and knowledge learned for economic gain by performing minor adjustments such as replacing zippers and charge 75 cents to a \$1.00 per service.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #4

1. Outcome Measures

Number of youth and adults applying knowledge gained and sewing for their families.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Our stakeholders continue to see a rise in the cost of living on the islands. As such the program sees a need to increase vocational capacity in order to assist their clients.

What has been done

The program held community courses targeting beginner sewers throughout the three most populated islands in the CNMI.

Results

405 adults students continue to apply the skills and knowledge learned. 40 youths completed the Summer Youth Sewing Program and received a certificate of successful completion. These youths are now able to replace buttons, do simple hemming and embroidery. Adults notice a big savings for clothing on their family budget and majority of them have expressed an interest in taking Advanced Sewing Classes.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
801	Individual and Family Resource Management

Outcome #5

1. Outcome Measures

Number of youths and adults completing workshops on Youth and Adult Money Management.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CNMI residents continue to experience a hike in every aspect of their surroundings. As such, the program intends to confront such problems through the instruction of Family Financial Management.

What has been done

Participants are taught how to develop a weekly, bi-weekly and monthly budget. They are taught to distinguish the difference between an income and expense as well as a need from a want. Food Stamp (NAP) recipients learned how to shop wisely and budget their NAP coupons to last until their next issuance. They are taught how to balance their checking account and the importance of savings.

One Youth Money Management workshop activity is for participants to make and maintain a piggy bank. Participants made piggy banks from cans and plastic containers. Some even built small wooden birdhouses for their piggy banks. A total of 350 participants attended the CRD Money Management Workshops and gained new knowledge in the process. Youth attended the workshops as part of their after school or weekends activities.

Majority of the adults participants attended because they were referred by agencies such as; the Division of Youth Services, Probation and Parole Office and from the Food and Nutrition Services Program.

Results

Majority of the participants now go shopping with a written shopping list. Food Stamp (NAP) recipients learned how to shop wisely and budget their NAP coupons to last until their next issuance. Majority of our participants took the 'Pay Yourself First' concept seriously. This is simply depositing money into your savings account and treating it as a Fixed Loan Payment obligation. 90% claimed to have opened a savings account and allotted minimum of \$5.00 bi-weekly. Many also reported to refused to accept ownership of an ATM card. 10 youths reported to have saved over \$150.00 within one year. Many also reported that their parents reduced their daily allowances due to financial hardship.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #6**1. Outcome Measures**

Number of youths and adults applying knowledge gained.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	79

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

350 Money Management workshops participants claimed to have gained new knowledge and continue to apply the knowledge learned. 100% realized the importance of developing a shopping list before going shopping. 90% do their shopping during weekends when groceries are on discount. 60% actually established a joint saving account and allot at least \$5.00 into their savings account on a bi-weekly bases.

What has been done

Majority of our participants took the 'Pay Yourself First' concept seriously. This is simply depositing money into a savings account and treating it as a Fixed Loan Payment obligation.

Results

100% of our participants claimed that they are spending less since they started applying the simple lessons that they have learned from the CRD Money Management workshops. The 60% who actually opened a savings account for the first time claimed that not accepting an ATM card was a smart decision.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
802	Human Development and Family Well-Being

Outcome #7**1. Outcome Measures**

Number of Adult Volunteers Recruited.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	35

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Community program success shares a strong correlation with strength in volunteers. The program focused on building in this area to ensure program sustainability.

What has been done

A Certificate of Appreciation for their valuable time and contribution were presented to our volunteers after every workshops that they participated. Those certificates were not only signed by our Program Director, they were also signed by our Program Dean and the College President.

Results

80% of our adult volunteers remained with the CRD Program throughout the one year period. CRD Program and the 4-H/Youth Development Program required long term volunteers to obtain a Police Clearance for there is always a possibility their they will be dealing with youths participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development

Outcome #8**1. Outcome Measures**

Number of Youth Participating in the 4H/Youth Development Program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2500	2300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The youth of the CNMI have limited resources in terms of activities and programs. The 4-H program serves as one of a handful of programs available to the youth and has the potential to develop the CNMI youth into positive, contributing members of society.

What has been done

A plethora of activities, trainings, workshops, publications and funding proposals have been developed and implemented in order to provide quality programming for the CNMI Youth.

Results

A large number of youth have been able to participate in 4-h activities and in many cases shown to benefit from their having participated in terms of character and overall capacity building.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities

Brief Explanation

A depressed CNMI Economy has limited the number and availability of youth programs in the CNMI. Funding for all programs has been reduced, and cause some programs to cease to exist.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Other (ES 237)

Evaluation Results

Before and after evaluations were conducted. We are noticing that in order for us to have a greater impact in the community, we must further develop our grantsmanship capabilities to assist our existing youth centers.

Key Items of Evaluation

None to report

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Diet, Physical Activity, and Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	50%		50%	
724	Healthy Lifestyle	50%		50%	
Total		100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	1.0	0.0
Actual	3.5	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
111776	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The DPAH, with the Department of Public Health-Diabetes and Prevention Program, organized the first workshop to write the CNMI's first-ever "CNMI 5 Year Strategic Plan to Prevent and Address Non-Communicable Diseases". The writing of the plan was facilitated by NMC-CREES, DPH-DPCP, and Dr. Temo Waqanivalu of the World Health Organization. The 3-day workshop brought together a variety of traditional and non-traditional stakeholders as part of the process of writing the plan. Some of the more than 20 departments and agencies represented included the Zoning Board, Nutrition Assistance Program, Sabalu Farmer's Market Association, Department of Public Works, Public School System-Food and Nutrition Service, Division of Environmental Quality, and the Department of Commerce.

The plan seeks to forge a more cohesive and holistic effort in addressing NCDs and the lifestyle factors that contribute to the incidence rate. Additionally, the plan will allow the CNMI to be eligible for funding from the WHO and the Secretariat of the Pacific Community. The NCD Plan will be formally presented to the CNMI in mid-2009; implementation of the plan will begin thereafter.

2. Brief description of the target audience

The target audience includes the general public, with a particular emphasis on areas of the islands that have a majority of its' residence at or below the poverty level. Taking into consideration social-economic status, educational attainment, and lifestyle (diet, physical activity, tobacco use) the majority of the general population can be considered "at risk".

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	100	5000	100	1500
2008	500	5000	500	3000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Diet, Physical Activity, and Health

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Development of Physical Activity Social Marketing Campaign (PASMIC)

Outcome #1

1. Outcome Measures

Development of Physical Activity Social Marketing Campaign (PASMIC)

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities
- Other (lack of collaboration)

Brief Explanation

Because the CNMI government is experiencing the direct effects of our economic slump, many of our partners are finding it difficult to continue pushing for expanded program offerings, while coping with decreases in funding and staffing. Additionally, the existence of quality data with regards to adult physical activity and diet practices continues to be a challenge.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Other (process evaluation)

Evaluation Results

Key Items of Evaluation